

Attorney's Docket No. : **378/9-1659**
U.S. Application No. : To be assigned
Filed : Herewith - 25 March 2002
Applicant(s) : Kurt Elith THOMSEN
International Application No. : **PCT/DK00/00532**
International Filing Date : **28 September 2000**
Priority Date Claimed : **28 September 1999 (PA 1999 01372); 18 May 2000 (PA 2000 00805)**
Title of Invention : **VESSEL**

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures [35 U.S.C. 371 (f)] at any time rather than delay examination until the expiration of the applicable time limit set forth in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed [35 U.S.C. 371(c)(2)]
a) ☐ is transmitted herewith (required only if not transmitted by the International Bureau)
b) ☒ has been transmitted by the international Bureau
c) ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☐ A translation of the International Application into English [35 U.S.C. 371(c)(2)]
7. ☒ Amendments to the claims of the International Application under PCT Article 19 [35 U.S.C. 371(c)(3)]
a) ☐ are transmitted herewith (required only if not transmitted by the International Bureau)
b) ☒ have been transmitted by the International Bureau
c) ☐ have not been made; however, the time limit for making such amendments has **NOT** expired.
d) ☐ have not been made and will not be made
8. ☐ A translation of the amendments to the claims under PCT Article 19 [35 U.S.C. 371(c)(3)]
9. ☐ An oath or declaration of the inventor(s) [35 U.S.C. 371(c)(4)]
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 [35 U.S.C. 371(c)(5)]

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98
12. ☐ An Assignment document for recording. A separate cover sheet (PTO-1595) in compliance with 37 CFR 3.28 and 3.31 are included.
13. ☒ A **FIRST** preliminary amendment
☐ A **SECOND** or **SUBSEQUENT** preliminary amendment
14. ☐ **THE APPLICANT AND/OR ASSIGNEE, IF ANY, HEREBY CLAIMS SMALL ENTITY STATUS.**
15. ☐ A change of power of attorney and/or address letter
16. ☒ (other items or information) **PCT Pub. No WO 01/23252 A1; PCT/IPEA/408; PCT/IPEA/416 with amended sheets;**

EXPRESS MAIL No.: **EL890535272US** Deposited: **March 25, 2002**

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Date: March 25, 2002

17. ☒ The following fees are submitted:

BASIC NATIONAL FEE [37 CFR 1.492(a)(1)-(5)]:				CALCULATIONS	PTO USE ONLY
<input checked="" type="checkbox"/> Search Report has been prepared by the EPO or JPO.....	\$	890.00			
<input type="checkbox"/> International preliminary examination fee paid to USPTO [37 CFR 1.482].....	\$	710.00			
<input type="checkbox"/> No International preliminary examination fee paid to USPTO [37 CFR 1.482] but International search fee paid to USPTO [37 CFR 1.445(a)(2)].....	\$	740.00			
<input type="checkbox"/> Neither International preliminary examination fee [37 CFR 1.482] nor International search fee [37 CFR 1.445(a)(2)] paid to USPTO.....	\$	1040.00			
<input type="checkbox"/> International preliminary examination fee paid to USPTO [37 CFR 1.482] and all claims satisfied provisions of PCT Article 33(1)-(4).....	\$	100.00			
ENTER APPROPRIATE BASIC FEE AMOUNT:			\$ 890.00		
Claims	Number filed	Number extra	Rate		
Total Claims (8)	8-20= 0	x	\$ 18. =	\$.00	
Indep. Claims (1)	1-03= 0	x	\$ 84 =		
<input type="checkbox"/> Multiple Dependent Claim(s) (if applicable) + \$ 280. =					
TOTAL OF ABOVE CALCULATIONS:			\$ 890.00		
Surcharge of \$130.00 for furnishing the oath or declaration later than [] 20 [X] 30 months from the earliest claimed priority date [37 CFR 1.492(e)]			\$ 00.00		
TOTAL OF ABOVE CALCULATIONS:			\$ 890.00		
Reduction by 1/2 for filing by small entity, if applicable. [Note 37 CFR 1.9, 1.27, 1.28]			\$ 0.00		
SUBTOTAL:			\$ 890.00		
Processing fee of \$130.00 for furnishing the English Translation later than [] 20 [] 30 months from the earliest claimed priority date [37 CFR 1.492(f)]					
TOTAL NATIONAL FEE:			\$ 890.00		
Fee for recording the enclosed assignment [37 CFR 1.21(h)] The assignment must be accompanied by an appropriate cover sheet (PTO-1595) [37 CFR 3.28, 3.31]. \$ 40.00 per property +			\$.00		
TOTAL FEES ENCLOSED:			\$ 890.00		
				\$	
				\$	

☒ A check in the amount of **\$890.00** to cover the above fees is enclosed.

☒ The Commissioner is hereby authorized to charge the deposit account any other fees required with this submission or to credit any overpayment to Deposit Account No: 04-0838. A duplicate of this form is enclosed.

NOTE: Where an appropriate time limit under 36 CFR 1.494 or 1.495 has not been met, a petition to revive [37 CFR 1.137(a) or (b)] must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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32,518

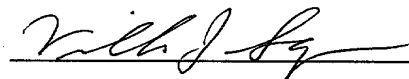
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Date: **March 25, 2002**

File No. 378/9-1659

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	: Kurt Elith THOMSEN
U.S. Application No.	: To be assigned
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Priority Date Claimed	: 28 September 1999
Title of Invention	: VESSEL

Commissioner for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

Prior to the examination of the above-referenced application, please amend the above-identified application as follows. Clean copies of claims 3-8 as amended are enclosed.

IN THE CLAIMS

Please amend claims 3-8, first line by changing "any of the preceding claims" to --claim 1--.


IN THE ABSTRACT

Add the enclosed Abstract to the application.

REMARKS

Favorable consideration and entry of the amendment to claims 3-8 of the application is respectfully requested. Claims 3-8 have been amended to remove the multiple dependant claims to reduce the filing fee. An abstract is also enclosed.

Respectfully submitted,


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Amended Claims

3. Vessel according to claim 1 characterized in that the displacement means comprise at least one wire winch (8) attached to each support leg (9) and a hydraulic system attached thereto.
4. Vessel according to claim 1 characterized in that the support legs each comprise load cells (13).
5. Vessel according to claim 1 characterized in that there are provided hollow spaces/chambers (12) in the hull (2), said hollow spaces/chambers being filled with/emptied for water via a control system.
6. Vessel according to claim 1 characterized in that upper end surface of the consoles (5) is placed on a level with the deck (4) of the vessel.
7. Vessel according to claim 1 characterized in that lower end surface of the consoles (5) is placed at a considerable distance to the ship's waterline and between same and the ship's bottom.
8. Vessel according to claim 1 characterized in that the first means comprise a rail secured to the hull and fastening means, for example bolts.

ABSTRACT

A vessel, preferably a ship, for transport and mounting of structures has a hull and at least four vertically elevated support legs and displacement apparatus for elevating the support legs so as to stabilize the ship for lifting heavy loads from the ship for mounting for example to a preinstalled base on the seabed.

VESSEL

5 The invention relates to a vessel, preferably a ship, for transport and mounting of structures, said vessel comprising a hull and at least four vertically elevational support legs as well as displacement means for elevating the support legs.

10 Such a vessel is known from for instance GB-A-2,120,607. In this specification a ship is described which is used for installation of large offshore structures. The ship is equipped with four elevationally movable legs and a rail device on the deck of the ship. However, the ship is specially designed in the sense that the four elevational support legs form an integral part of the vessel and accordingly are mounted through its deck. Moreover, use of the rail structure means that the ship can only be used when a structure is
15 extended outward from the deck and is to be arranged on a platform on a level with the deck's surface.

20 In connection with the mounting of windmills offshore it is furthermore known to transport same on a jack-up barge, which is towed out or which may perhaps sail on its own, and where only one mill at a time can be carried along, and where the speed of the transport unit is very limited. Such a jack-up is also very sensitive to wind conditions, for which reason it is only possible to erect the mills partly relatively close to land and partly in relatively calm weather.

25 The object of the present invention is to provide a vessel which based on an existing vessel, i.e. complete with all gear, makes it possible to transport windmills and mount these mills on previously built structures on the seabed, and where the windmill erection itself will take place under the same
30 conditions on land, and where the mounting may take place via cargo ships of the self-supplying type. The ship is in other words a unit which can hand-

le all tasks comprising loading of the mill units, transport of several mill units to the mounting site, including lifting thereof from the cargo ship and lowering thereof to the preinstalled base on the seabed.

- 5 The ship is accordingly a cargo ship, preferably a container ship or a bulk carrier, to which certain structural additions have been made. The cargo ship distinguishes itself by holding a big cargo, which in this case will be up to 10 windmills, but at the same time also being highly seaworthy and able to maintain good speed, just as such a cargo ship holds the necessary facilities for the crew.

- 10 The object of the invention is achieved by a vessel of the type described in the preamble and where the support legs are furthermore mounted in at least two consoles which by first means are connected to the hull's right and left long side, respectively, and where the vessel also comprises at least one auxiliary structure, preferably a crane, for handling and placing the structures below the waterline.

- 15 The system accordingly functions by securing the mentioned consoles to known vessels by means of first means which for example may be a rail device such as is also disclosed in claim 8. Through each console there is mounted one preferably two elevationally movable legs, said legs ensuring that the ship will remain stationary, even in rough sea. It should be noted that in connection with the handling of the windmills a locking of the legs will
- 20 take place in that the ship is raised to the necessary level, whereupon a blocking takes place since a high wave would otherwise give rise to instability during handling of the mills. By means of the crane itself it is thus possible to handle the large windmills, and where on the deck there may furthermore be mounted additional auxiliary cranes to ensure loading to and
- 25 from the quay.

- By providing a vessel according to the invention, and as furthermore disclosed in claim 2, the support legs will slide relatively frictionless in the sleeve which partially encloses the support legs. The sleeve may as disclosed be coated with a friction reducing substance, preferably in the form of teflon, or the support legs may be coated with teflon for achieving the same function. Furthermore, the legs are adapted for the sleeve via a sliding fit since it is important that there is not too much clearance between sleeve and support leg.
- 10 By providing a vessel according to the invention, and as furthermore disclosed in claim 3, an appropriate method for adjusting the vertical position of the support legs is achieved, since the hydraulic system will provide for the correct pressure on the support legs. It should also be noted that each support leg preferably has two wire winches mounted on either side thereof.
- 15 The number of windings on the wire winch indicates the gear ratio where a gear of 9 is preferably preferred in such a manner that when the wire winch produces a 35 ton load, the pressure which is produced via a hydraulic station on each support leg may reach up to approximately 300 tons.
- 20 By providing a vessel according to the invention, and as furthermore disclosed in claim 4, the pressure on each individual support leg may be measured and indicated via the load cell.
- 25 By providing a vessel according to the invention, and as furthermore disclosed in claim 5, it is possible to adjust the weight in such a manner that when a corner exerts a high pressure on the load cells, such as disclosed in claim 4, they will send a message to the control system to change the pressure diagonally opposite this unit. This is accomplished by removing liquid from the chambers in this corner and by pumping in liquid in the diagonally opposite corner, thus achieving a form of equilibrium and compensating for the load weight that is moved. This anti-heeling system may be active both
- 30

when the ship is floating and when it is anchored on the seabed via the support legs. In the first instance, a liquid sensor and gyro function will register heelings of the ship and a signal is transmitted from the sensor to the anti-heeling system, thus ensuring the stability of the ship.

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In the latter instance, where the liquid sensors are not functioning, the load cells mounted on the support legs will register any pressure and any change of pressure on the support legs, when a load is moved, and will signal this information to the anti-heeling system, which is thus activated and compensates for the differences in pressure.

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By providing a vessel according to the invention, and as furthermore disclosed in claims 6 and 7, an appropriate size of the console itself is achieved such that good control of the support legs within the longitudinal sleeve is achieved, said sleeve being located inside the console, or which is obtained by means of the holes which are cut in the upper and lower surfaces of the console to provide an aperture through which the support legs may slide.

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By providing a vessel according to the invention, and as furthermore disclosed in claim 8, the console will make up a removable unit which thus can be dismounted from/mounted on the structures of the known vessel.

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The invention will be further explained below with reference to the drawing wherein

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fig. 1 is a top sectional view of a ship with tank/consols mounted thereon with support legs and mounted cranes,

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fig. 2 is a cross section of a crane mounted on a ship,

fig. 3 is the position of the support leg in relation to the tank/console and the winch therefore,

fig. 4 is a top view of the tank/console with winch and support leg shown in fig. 3,

fig. 5 is a cross section through the tank with support leg mounted on the side of the ship,

fig. 6A-C is the interaction of wire winch and support leg.

Fig. 1 shows a top view of a ship 1, comprising a hull 2, a deck 3, upon which deck two smaller auxiliary cranes 10 are positioned. On either side of the hull there is mounted a console 5, in which support legs 9 are placed, preferably two support legs at either end of the console. The support legs are on either side connected to a winch with wire 8, said wire winch providing for the right pressure on the support legs 9 via a hydraulic system.

The columns of the support legs are rectangular and end in a base in the order of 10 m² and are furthermore manufactured according to known principles.

The base itself is in the form of a plate and is arranged in a cardanic suspension such that its inclination adjusts to the slope of the seabed. The area of the support bases may be extended since they are detachably mounted on the support legs.

Between each pair positioned opposite each other on either side of the hull a large crane 11 is positioned, said crane being capable of lifting and mounting windmills to a previously mounted base on the seabed.

Furthermore, the ship comprises additional cranes 10, since cargo ships are known to have smaller cranes which are positioned at either end of the ship, which cranes can be used for ordinary loading, and which may, if required, be used during the lowering of the mill itself, since these act as guides for the mill wings.

The ship comprises a large crane which has a loading capacity of about 450 tons. This crane is taken from known, so-called caterpillar cranes where the movable part is removed, and the crane is accordingly mounted stationarily on the ship's deck, in that the crane is positioned in the middle of the longitudinal direction of the ship, preferably halfway between two support legs positioned opposite each other and on either side of the hull, but displaced or displaceable, however, to one or the other side of the longitudinal side of the ship. On the ship there is mounted a 12 meter tower on which the crane is positioned, whereby the crane reaches a height which makes it possible to handle the extremely high windmills.

Fig. 2 shows a side view of the crane 11, from which it appears that same is displaced towards one of the long sides of the ship. Fig. 2 also shows pockets in the sides of the hull itself, said pockets 12 forming part of the anti-heeling system, and which can also be coupled with the functioning of the large crane 11. The anti-heeling system is primarily built in to bring about a counterbalance to the moment of the smaller cranes during operation in that these chambers, which the anti-heeling systems normally cooperate with, are filled with water diagonally opposite the side wherein a crane is working so that the ship does not tip. This anti-heeling system has thus in a novel manner become activated in connection with the use of the large crane in that a control system has been built in, said control system being connected to load cells placed on the support legs and, if desired, at each support base, and said load cells registering changes in the pressure on the individual leg. In the cases where a load cell for example indicates

pressure on a leg of around 350 tons and changed e.g. from 200 tons, the load cell will send a message to the control system regarding a change diagonally opposite this unit by removing liquid in the 350 tons corner from the anti-heeling system and by pumping in liquid in the diagonally opposite corner so that a form of equilibrium is achieved.

The system may be controlled via a computer program, or it may be handled purely manually. It should be noted that the ship with the built-in support legs and crane is designed to be capable of operating in a 3 meter actual wave height, which corresponds to 1½ meters significant wave, since it is essential by the structure that it can be held plane under the forces existing by such a wave condition. What decides whether or not it is possible to erect a mill will therefore not be the sea conditions, but on the contrary the actual wind conditions, and said wind conditions will be the same as are existing on land.

In the cases where an actual wave height is in excess of 3 m, the pressure on a support leg will be in excess of 300 tons, so that the support leg with the actual dimensions cannot be held stable. The support leg can naturally by giving the wire winch more windings achieve a higher pressure effect, but this is not relevant since a heavier sea will imply a higher wind force, and where this wind force is so high that the windmill cannot be positioned, since in that case the wind will exert too great a pressure on the wings of the windmill itself.

Furthermore, the structure comprises load cells 13 which are attached to each support leg 9, in that each support leg 9 also extends within a sleeve 14 and is coated with teflon to create less friction resistance.

Fig. 3 is a side view of the tank/console 5 and through which a support leg, preferably two, are positioned, in that at least one, preferably two, wire

winches 8 are attached to each support leg. This is furthermore seen in fig. 4, from which it is apparent that the console 5 encloses the support legs 9 within their sleeve 14, and where the mentioned winches 8 are arranged on either side, whereas fig. 5 shows a cross section through the console 5, said console being removably mounted to the hull 2, in that to the hull's long sides there is welded a longitudinal rail 6, which is L- to V-shaped, and into the recess of which a plate portion from the tank rests and where the top end of the tank via a bolt is mounted on the cargo ship. Through this tank/console 5 the support leg 9 is accordingly positioned. The tank ends at the top on a level with the deck/rail, whereas the lower portion is substantially below the water line. During the mounting of a windmill the ship will thus on all four legs exert a pressure of 300 tons, which will lift up the ship, whereafter the winch is locked such that a possible wave will not give rise to instability. If the winch is not locked, a pressure equalisation will take place via the function attached to each leg so that the instability is neutralised. Each leg has a length of approximately 20 m.

Mounting of the consoles takes place by a bolted joint which is put in the hull by each so-called web frame, with a bolt on either side.

The hollow space between the hull and the consoles on the slanted surface immediately below deck level is treated with Chockfast, a highly adhesive friction substance, which thus transfers forces from support legs and consoles to the hull over a significantly larger carrying surface than by exclusively using a bolted joint where only the stress resultant of the bolted joint can be taken into account.

The rail connection itself at the base of the consoles is provided to hold the consoles in the correct position the whole time and functions therefore only as a hinge in that it prevents the consoles from tipping out from the hull. Accordingly, it does not carry the ship at all.

By the above described product the ship will be lifted out of the water to such an extent that waves up to a certain size will have no influence on the ship.

5 All other systems lift the floating object all the way out of the water with the drawbacks associated therewith, in that those systems, so-called jack-ups, are highly sensitive at the moment when the bottom of the object just leaves or meets the surface of the sea, if there are waves, so that it can take long time between removal from one operational place to another, in
10 this case from mill to mill, whereof erection of 50 mills may well be planned.

Fig. 6A shows how a wire winch presses the leg against the bottom, one end of the wire being fastened to the support leg, and the other end being mounted on a hydraulic winch with automatic tightening (tension), which is
15 normally used for mooring winches on larger ships.

When the ship is at the position, the legs are lowered to the bottom of the sea, and the ship is lifted so much that it is not moving. Then the winches are set to tension so that the ship may follow the rising and falling tide. Suf-
20 ficient lift will normally be at about 5% of the ship's displacement. When the accurate mounting itself is to be made, the legs are locked and the pressure of the legs controlled by the trim system of the ship such that the heeling moment from the load hanging in the crane is equalized by ballast water, which is moved in the opposite direction.

25 When practically applied, the anti-heeling system is put out of action at the moment when the support legs are put down. This happens because the system functions by means of impulses from the ship's heeling sensors in such a manner that it will compensate by working opposite the signals thereof, but since the ship does not heel, the system will not receive any
30 signals.

The load cells register the change in pressure which is stored in a control panel. The operator or the administrative control system continuously controls the pressure on each of the 4 legs and thus decides if there is to be a redistribution of the ballast of the ship.

5

These sensors are bypassed by mounting load cells on each support leg. Via an Ethernet connection – since the load cell gives an electric signal similarly to said sensors – the anti-heeling system of the ship may again receive impulses corresponding to those given by the heeling sensors. In this way, the anti-heeling system may be manipulated into thinking that the ship is heeling, which is clearly not the case, and will therefore compensate for the moved load.

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In principle, there is no connection between the winches and the load cells since the winches are mooring winches functioning by giving a constant hydraulic pressure. If the resistance in the wire declines, the winch will start to haul in, and vice versa, if the resistance in the wire rises to a level higher than the hydraulic pressure, then the winch will ease off the wire until the original pressure is established. This is brought about by means of a kind of excess pressure valve which respectively shuts off and opens for the flow of oil.

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Fig. 6B shows how the wire is cut for pressure, but a combination of winch size and number of cuttings may be adjusted to any ship.

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The drawing, fig. 6C, shows the lift system where the hydraulic winch also is likewise a tension winch, but only with the function of holding the wire taut in all situations.

AMENDED PATENT CLAIMS

- 5
1. Vessel (1), preferably a ship, for transport and mounting of structures, said vessel (1) comprising a hull (2) and at least four vertically elevational support legs (9) as well as displacement means for elevating the support legs (9) **characterized** in that the support legs (9) are mounted in at least two consoles (5) which by first means are connected to the hull's (2) right and left long side, respectively, and where the vessel (1) also comprises at least one crane (11), for handling and placing the structures below the waterline.
- 10
2. Vessel according to claim 1, **characterized** in that the consoles (5) comprise at least one sleeve (14) coated with a friction reducing substance on the inner surfaces of the sleeves, said inner surfaces enclosing parts of the outer circumference of a support leg (9).
- 15
3. Vessel according to any of the preceding claims **characterized** in that the displacement means comprise at least one wire winch (8) attached to each support leg (9) and a hydraulic system attached thereto.
- 20
4. Vessel according to any of the preceding claims **characterized** in that the support legs each comprise load cells (13).
- 25
5. Vessel according to any of the preceding claims **characterized** in that there are provided hollow spaces/chambers (12) in the hull (2), said hollow spaces/chambers being filled with/emptied for water via a control system.
- 30
6. Vessel according to any of the preceding claims **characterized** in that upper end surface of the consoles (5) is placed on a level with the deck (4) of the vessel.

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7. Vessel according to any of the preceding claims **characterized** in that lower end surface of the consoles (5) is placed at a considerable distance to the ship's waterline and between same and the ship's bottom.

5

8. Vessel according to any of the preceding claims **characterized** in that the first means comprise a rail secured to the hull and fastening means, for example bolts.

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International Bureau



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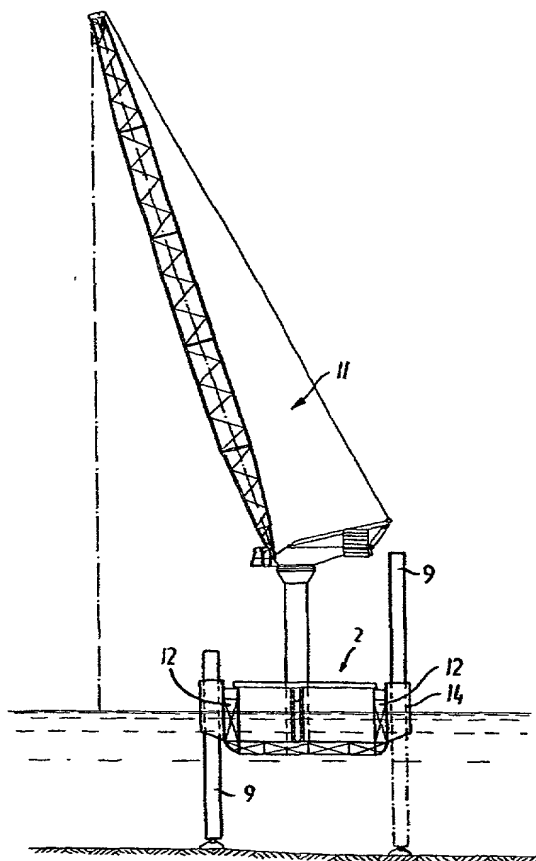
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- (71) Applicant and
(72) Inventor: THOMSEN, Kurt, Elith [DK/DK]; Skansevej 3, DK-7000 Fredericia (DK).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
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[Continued on next page]

(54) Title: VESSEL



(57) Abstract: A vessel (1), preferably a ship, for transport and mounting of structures, said vessel (1) comprising a hull (2) and at least four vertically elevational support legs (9) as well as displacement means for elevating the support legs (9). The support legs (9) are mounted in at least two consoles (5) which by first means are connected to the hull's (2) right and left long side, respectively, and where the vessel (1) also comprises at least one auxiliary structure, preferably a crane (11), for handling and placing the structures below the waterline. The result is a vessel which based on an existing vessel, i.e. complete with all gear, makes it possible to transport windmills and mount these mills on previously built structures on the seabed, and where the windmill erection itself will take place under the same conditions on land, and where the mounting may take place via cargo ships of the self-supplying type. The ship is in other words a unit which can handle of all tasks comprising loading of the mill units, transport of several mill units to the mounting site, including lifting thereof from the cargo ship and lowering thereof to the preinstalled base on the seabed.

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1/5

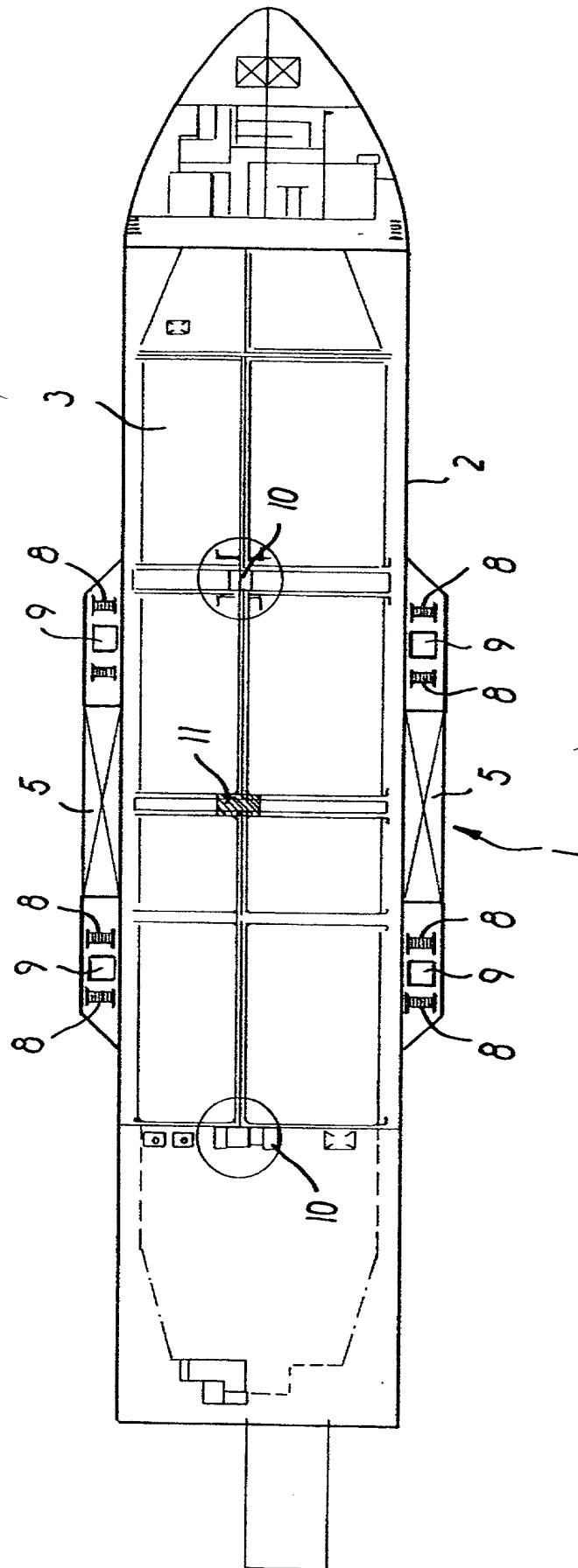


FIG. 1

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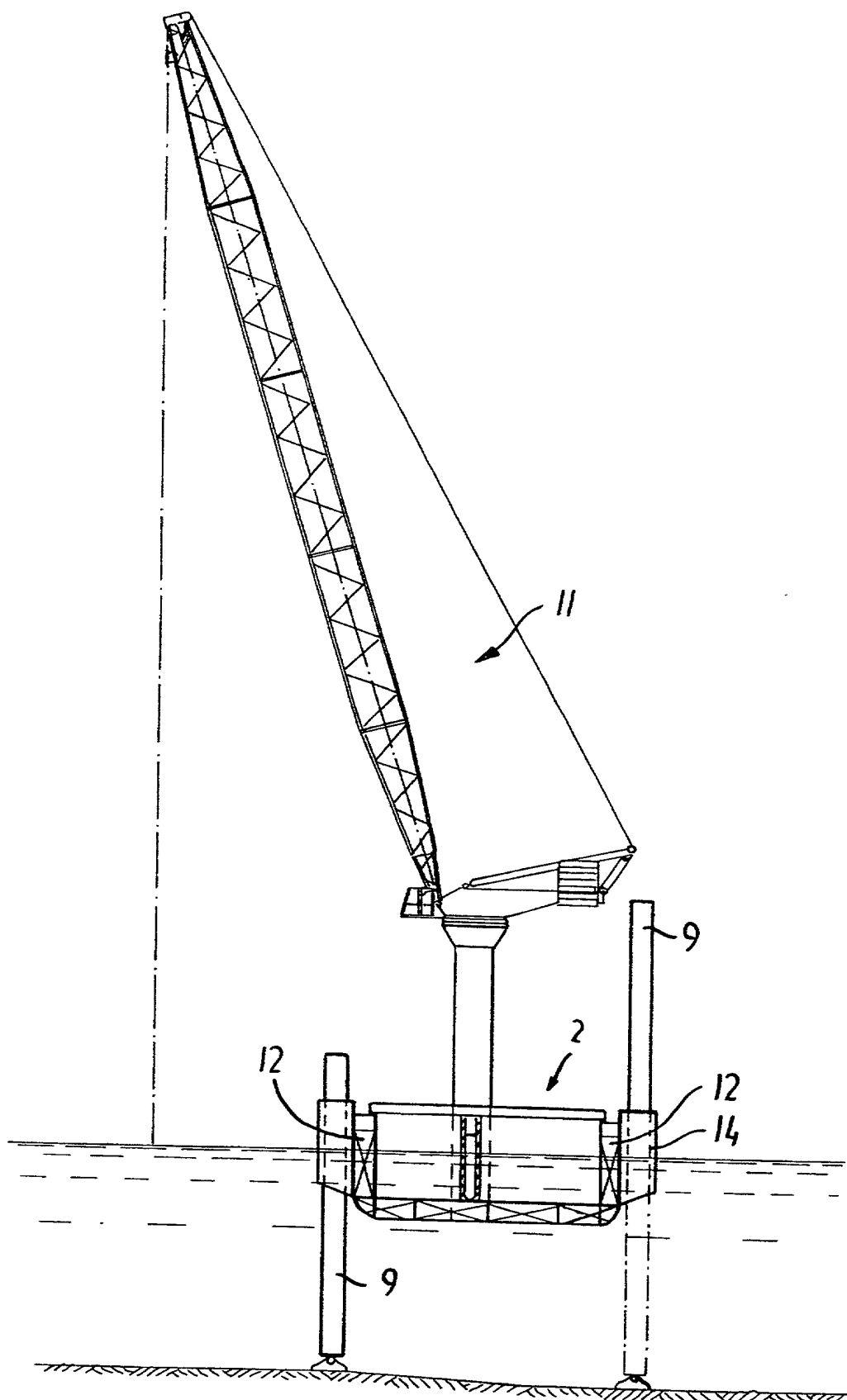


FIG.2

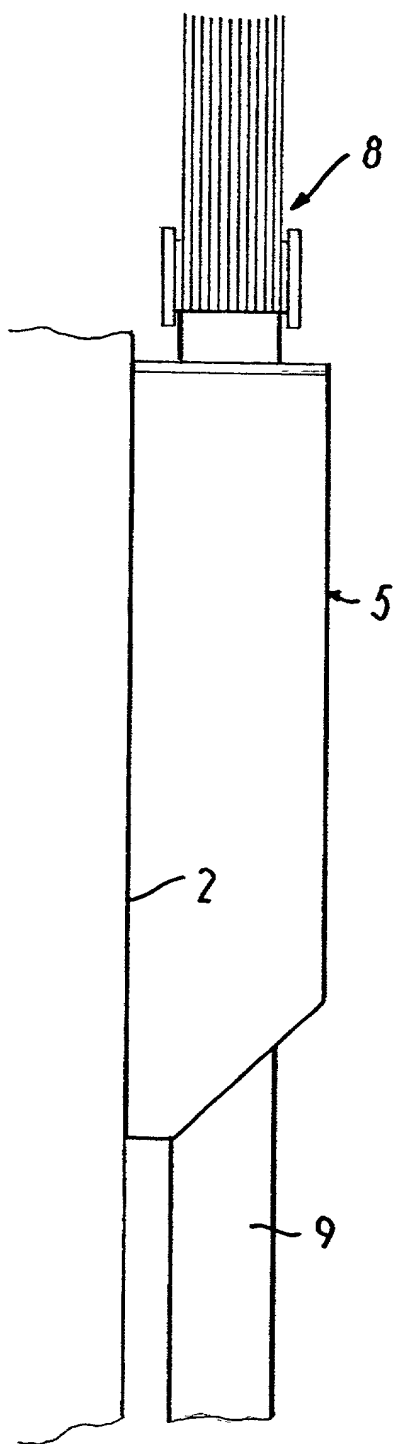


FIG. 3

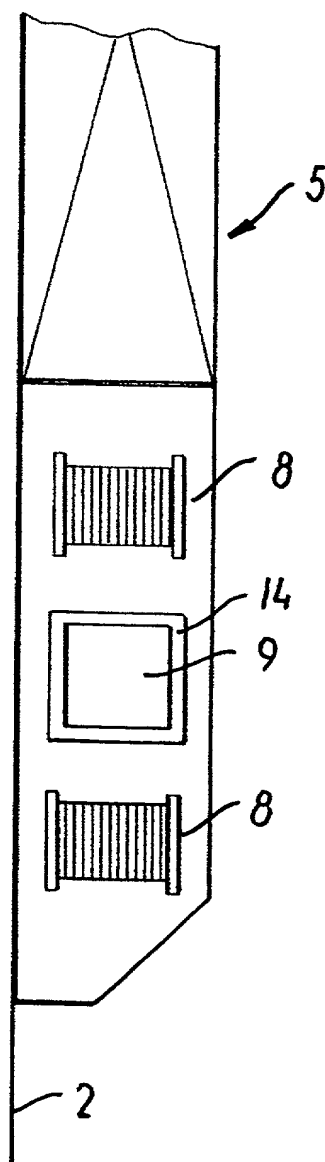
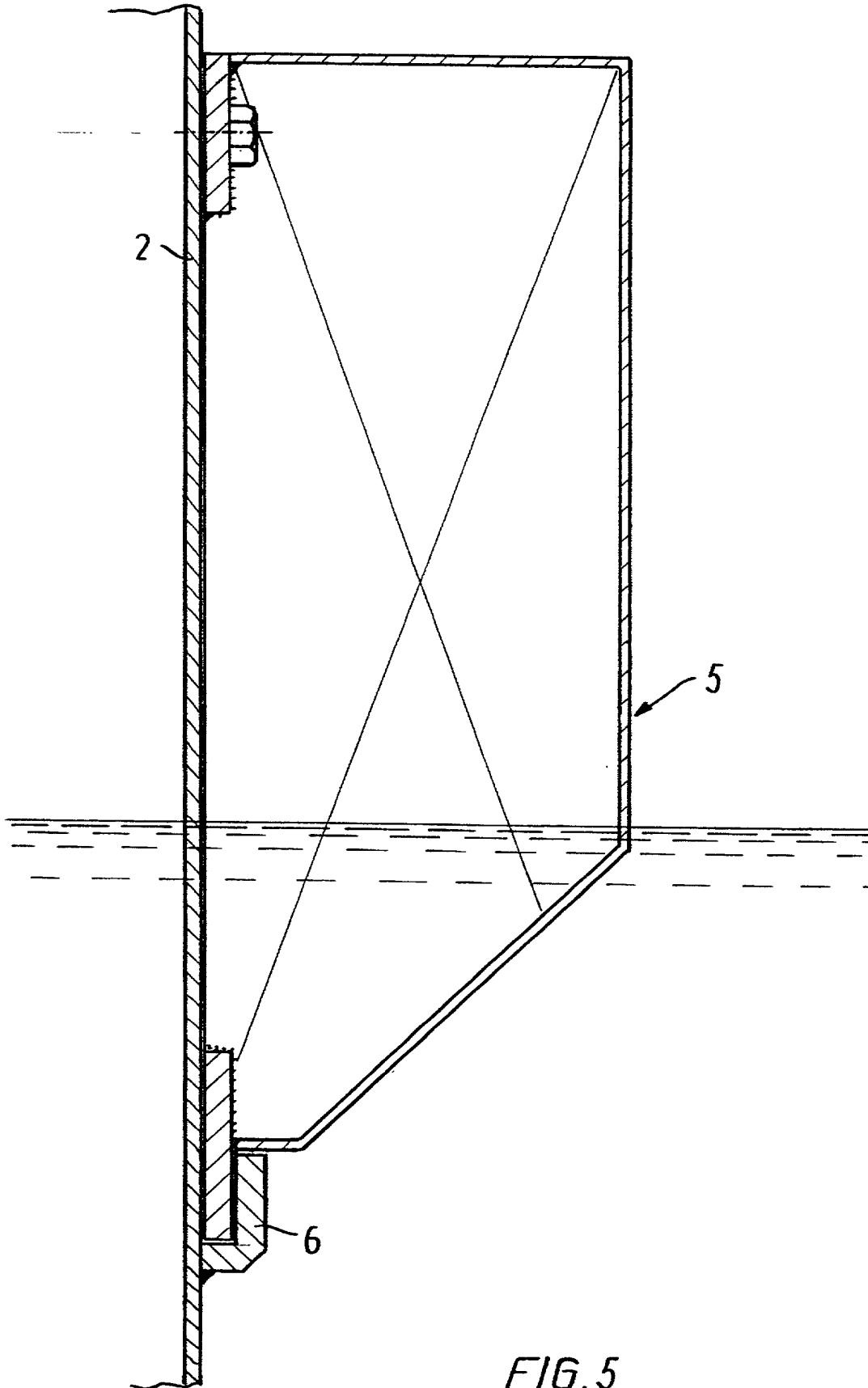


FIG. 4

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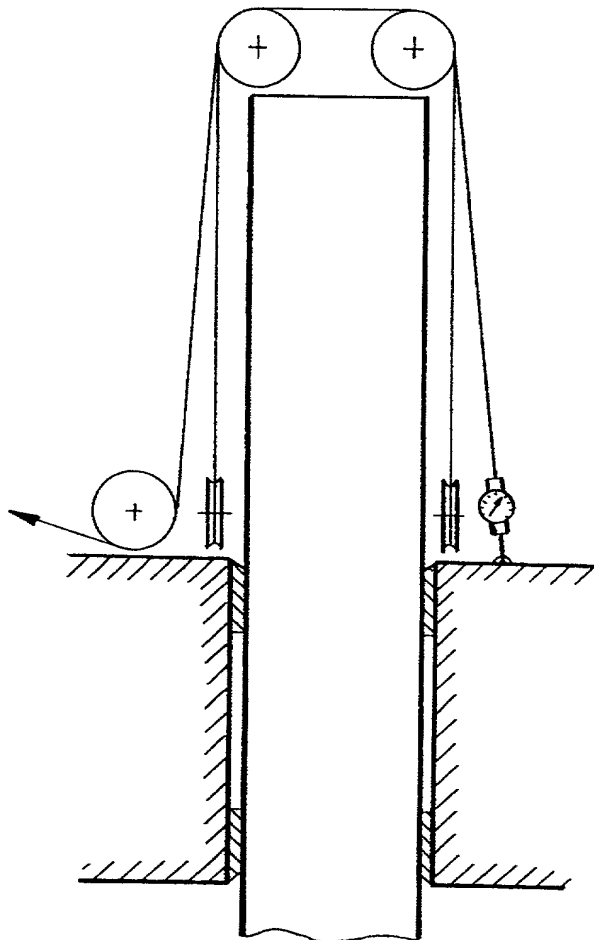


FIG. 6a

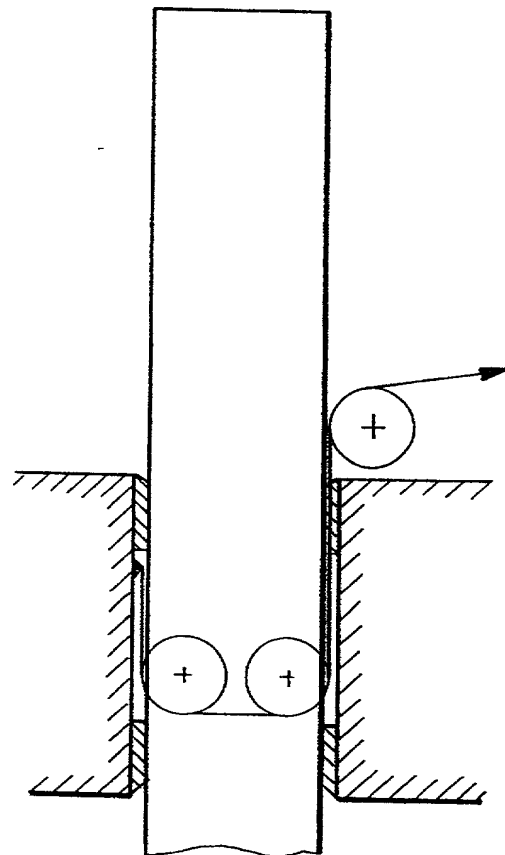


FIG. 6c

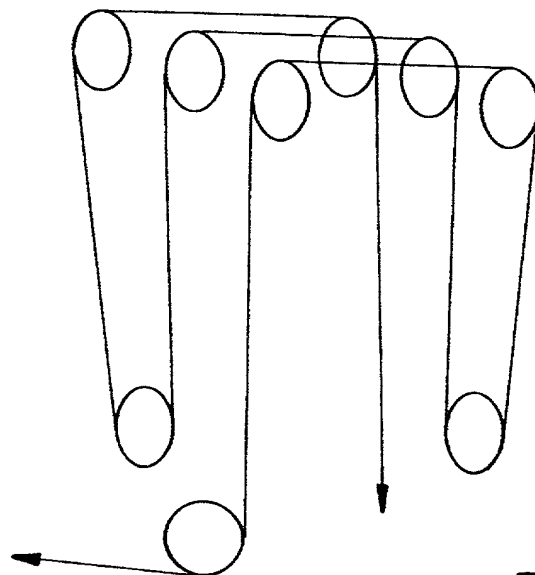


FIG. 6b

DECLARATION FOR PATENT APPLICATION

As a below named inventor(s), I (we) hereby declare that:

My (our) residence(s), post office address(es) and citizenship(s) is (are) the same as stated below next to my (our) name(s).

I (we) believe I am (we are) an original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: VESSEL

the specification of which is attached hereto unless the following box is checked:

☒ [X] was filed on 28 September 2000 as
PCT International Application Number PCT/DK00/00532
and was amended on 12 October 2001 (if applicable).

I (we) hereby state that I (we) have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I (we) acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I (we) hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority YES	Claimed: NO
(Number)	(Country)	(Day/Month/Year)		
PA 1999 01372	Denmark	28/09/1999	X	
PA 2000 00805	Denmark	18/05/2000	X	

I (we) hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below:

(Application Number)

(Filing Date)

I (we) hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I (we) acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulation, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.)	(Filing date)	(STATUS-patented, pending, abandoned)

DECLARATION FOR PATENT APPLICATION

I (we) hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith and to act in accordance with the instructions from:

William J. Sapone, Registration No. 32,518, Henry D. Coleman Reg. No. 32,559 and Neil Sudol, Registration No. 31,669, all of Coleman Sudol Sapone P.C. 714 Colorado Avenue, Bridgeport CT 06605-1601, U.S.A. (3)

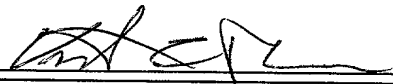
Address all telephone calls to: **William J. Sapone, Esq.** at Telephone No. **(203) 366-3560**

Address all correspondence to: **William J. Sapone, Esq.**
Coleman Sudol Sapone P.C.
714 Colorado Avenue
Bridgeport CT 06605-1601 U.S.A.

I (we) hereby declare that all statements made herein of my (our) own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or 1st inventor (given name, family name):		Kurt Elith THOMSEN	
Residence:	Skansevej 3 DK-7000 Fredericia Denmark DKX	Citizenship:	Denmark
Post Office Address:	SAME		

Inventor's signature:



Date:

22/3-2002